

1 ADJUSTABLE WHEEL AND METHOD OF MAKING THE SAME

Cross-Reference to Related Application

5 This application claims priority of provisional
application Serial No. 60/447,660 filed February 14, 2003

Background of the Invention

10 The present invention relates to a wheel for a vehicle
and a method of manufacturing the same. In particular, the
invention relates to a wheel for a motorcycle, wherein a
15 design or shape is created on the wheel, which design or shape
may be more complex than previously possible and may be
adjustable.

20 Wheels are often manufactured from wheel blanks. A wheel
blank is a disk having an outer peripheral portion, an inner
hub portion and an intermediate portion bridging the outer
peripheral portion and the inner hub portion. The outer
25 peripheral portion may extend generally perpendicular from the
intermediate disk portion. The inner hub portion may also
extend generally perpendicular from the intermediate disk
30 portion, forming a plateau in the center of the wheel blank.
For some vehicles, where a wheel will be seen from both sides,
such as a motorcycle, the wheel blanks for such vehicles have

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1 opposed side surfaces that are symmetrical to one another.

 The wheel blank may then be machined into a wheel.
First, holes through which means for attaching the wheel to a
5 vehicle frame may be drilled through both sides of the inner
hub portion. Further, designs may be created in the
intermediate portion of the blank by machining out holes in
10 various shapes. In addition to holes, crevices, grooves or
other indentations may be machined into the intermediate
portion to create more intricate designs. The machined wheel
blank may then be painted or chrome plated to finish the
15 wheel. The indentations may be painted a different color from
the wheel base to enhance certain aspects of the design, or
they may be the same color as the wheel base color.

20 While machining wheel blanks as described above allows
for some creativity, it does not easily allow for complicated
designs or for changes or edits to a design that involve
25 increasing surface area once a blank has been machined. It is
also difficult to provide a two-tone or multi-tone color
scheme for complicated shapes on a wheel design, or to combine
chrome-plated and painted design elements. Attempting
30 complicated finishes, if even possible, is also a costly
procedure. Finally, due to the relatively two-dimensional

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1 nature of machining wheel blanks, it is difficult to make
undercuts, hollow out large areas of the wheel blank or
otherwise provide three-dimensional effects.

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1 **Summary**

 In one embodiment, the present invention provides a wheel
where the design on the wheel may have an increased complexity
5 and/or surface area. In that or other embodiments, the
present invention provides a wheel that may not have to be
remachined in order to change or edit the design, and provides
10 a wheel that may allow for undercuts, hollow areas or other
three-dimensional effects in a design. Finally, embodiments of
the present invention may provide a wheel that allows for a
two-tone or multi-tone color scheme that is easy and
15 inexpensive to create, even for complicated or intricate
designs.

Brief Description of the Drawings

20 FIG. 1 is a diagrammatic side view of an exemplary
embodiment of the present invention.

 FIG. 2 is a diagrammatic view of an exemplary design
25 plate of the present invention.

 FIG. 3 is diagrammatic side view of another exemplary
embodiment of the invention.

30 FIG. 4 is diagrammatic side view of another exemplary
embodiment of the invention.

1 Detailed Description of the Invention

FIG. 1 shows a diagrammatic side view of an exemplary
embodiment of the present invention. The wheel blank 10 may
5 be formed so as to comprise an outer peripheral portion 13 (as
shown in FIG. 3), an inner hub portion 12 and an intermediate
portion bridging the outer peripheral portion 13 and the inner
10 hub portion 12. Wheel blanks may be manufactured from any
suitable material, but typically the blanks are cast aluminum.
Wheel blanks may also be made from steel. Located within the
inner hub portion 12 are holes 14 through which means for
15 attaching the wheel to a vehicle frame may be passed. Such
holes are typically drilled into the cast blank.

As shown in the exemplary embodiment of FIG. 1, large
20 sections 20 of the original wheel blank have been cut out so
that the remaining sections form spokes 21. The sections 20
may be cut out using computer controlled machining, or other
25 such methods suitable to accomplish the desired effect. A
wide variety of sized or shaped holes may be cut into the
intermediate section depending on the base design desired.
Additionally, the intermediate portion may be left entirely
30 intact if so desired. In addition to the large sections 20
that may be entirely removed from the wheel blank, crevices

1 18, grooves 16 or other indentations or design elements may be
machined into the wheel blank.

5 For motorcycle wheels, each side surface is typically
machined out in a symmetrical pattern so that the wheel will
look the same from either side. However, the side surfaces
need not be symmetrical and, for vehicles where both sides of
10 the wheel are not visible, the side surfaces will typically
not be symmetrical. The present invention is applicable to
situations where designs are symmetrical or asymmetrical and
where one or both sides of a wheel have a design.
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In addition to the base design of the wheel blank, holes
may be drilled into the blank in order to bolt on, rivet on or
otherwise attach additional design elements. These elements
20 may be designed in a variety of shapes, sizes, textures and
colors and may allow the design to be more intricate or ornate
than would be reasonably possible or economical to achieve
with computer controlled machining alone. The design elements
25 may be attached to the blank by inserting bolts through holes
in the design elements and into threaded holes that have been
drilled into the wheel blank, or by other appropriate means.
30 If bolts are used, the bolts may have hex heads, slot heads,
phillips heads, allen heads or other means allowing them to be

1 driven into the threaded holes in the blank. The holes in the
design elements may also have a counterbore or other means to
allow the bolt to be driven into a recessed position or a
5 position flush with the surfaces of the design element.

In a further exemplary embodiment of the present
invention, the design elements for a wheel may comprise
10 machined plates 22. Plates 22 may be machined into any
desired shape and may be the same or a different color from
the wheel blank base color. In FIG. 2, for example, the
plates 22 are shown to be generally V-shaped, in FIG. 3, the
15 plates are shown to be a more intricate U or W shape and in
FIG. 4, the plates are a more simple spearhead shape.
Further, plates 22 do not all have to be the same shape, but
20 rather may be used in combinations of any size and shape.
Plates 22 may be manufactured from any suitable material, but
typically the plates are cast aluminum. The plates and other
25 design elements may also be machined or stamped from steel.

Plates 22, as with other possible design elements, may
be attached to wheel blank 10 by any means sufficient to
30 securely attach the plates 22 to the blank 10, but also to
allow the plates to be relatively easily removed if so
desired. One means for attaching plates 22 to blank 10 is by

1 a screw or bolt 24. Threaded holes (not shown) may be drilled
into any portion of the blank to provide a means for attaching
the plates 22 to the blank 10. The number of holes permitted
5 is limited only by the amount of the intermediate portion left
after initial machining and the amount of structural support
desired to be provided by the wheel. When bolts 24 are
10 inserted into the holes to attach plates 22 to wheel blank 10,
an adequate amount of a high strength threadlocker may be
applied to the threads of the screw to more securely hold the
plates 22 to the wheel blank 10. A high strength threadlocker
15 or other appropriate adhesive allows the screws to remain in
place despite vibration during the use of the wheel, yet still
allows for their removal as necessary with an appropriate
20 device such as a wrench or screwdriver. An example of an
applicable high strength threadlocker is LOCTITE® manufactured
by Loctite Corp. of Rocky Hill, CT.

25 Removability of the plates 22 allows for plates creating
different designs to be easily interchanged with existing
plates. After they are designed, the plates 22 may be
30 painted, chrome-plated and/or textured as desired. Having the
plates 22 separable from the base design allows for ease of
initial coloring as no masking of the base design is

1 necessary. Additionally, plates 22 may be removed, painted a
different color and reattached. The same flexibility can also
be achieved with design elements other than plates to allow
5 for a great deal of customization and originality in creating
wheel designs.

It should be understood that the specific embodiments of
10 the present invention described above may be modified or
revised without departing from the spirit of the present
invention. For example, any number, size and shaped plates
may be attached to the wheel. Accordingly, the present
15 invention should not be viewed as limited by those embodiments
but rather, its scope should be viewed as set forth in the
following claims.